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THE STATE OF THE UPPER RESPIRATORY TRACTS OF WORKERS IN TITANIUM PRODUCTION [Sostoyaniye verkhnikh dykhatel'nykh putey u rabochikh titanovogo proizvodstva]

by

F.A. Syroyezhkin

(Zaporozh'ye)

In 1791 the English chemist William Gregor, and in 1795 the German chemist Martin Klaproth discovered chemical element No. 22 and named it titanium. The discovered substance was not elemental titanium, but titanium dioxide. After long years of investigation titanium was obtained for the first time in pure form in 1875 by the Russian scientist D. K. Kirillovyy.

Obtaining pure titanium from ores is an extraordinarily complex technological process. The electrolytic decomposition of titanium dioxide is a process still not assimilated by industry, and its reduction by carbon can be done only in a vacuum at T ≈ 3000°. Therefore metallic titanium is in the meantime obtained by the following technological processes: the magnesiothermal and sodiothermal methods. These two methods are the most widely used in industry. In spite of the laboriousness and energy consumption

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of titanium production, it is already becoming one of the most important branches of metallurgy.

We otolaryngologists cannot help but be interested in the question of the effect of titanium and its derivatives on the human organism, and in particular, on the mucous membrane of the upper respiratory tracts with its analyzers.

At different stages in the complex process of titanium production various chemically active compounds are given off, which then affect the human organism, entering most often through the respiratory tracts. On the basis of data from a mass examination of workers in titanium production plants, sharp and chronic pathology of the otolaryngological organs was discovered, which then compelled us to carry out a deeper treatment of the occupational pathology of this production.

Observations of a large number of workers of various occupations in shops in a titanium-magnesium factory showed that a single distinguishing feature of autolaryngological illnesses was not noted. For all the groups of the discovered patients with the first stage of changes in the mucous membrane of the upper respiratory tracts, catarrhal inflamation in different stages of the illness was noted. The given manifestations in the mucous membrane of the upper respiratory tracts, one must assume, are natural defense reactions against external irritations due to those chemical compounds located on the working premises. A definite regularity in the sequence of changes in the mucus was not always noted. We always observed that workers had functional displacements in the mucus of the upper respiratory tracts, expressing themselves in complaints of various unpleasant sensations in the nose and throat and in swallowing, a lowering of the senses of smell and taste, and in changes in

objective indicators, such as the ability to breathe through the nose, and the reflex, secretory, olfactory and excretory functions of the mucous membrane. A further study of the functional and morphological changes in the mucous membrane of the upper respiratory tracts demands the application of prophylactic measures to combat occupational illnesses of the upper respiratory tracts.